



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,386	03/29/2004	Kazuhisa Yokoyama	Q80760	3078

23373 7590 04/04/2006
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

LEYSON, JOSEPH S

ART UNIT PAPER NUMBER

1722

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/811,386

Applicant(s)

YOKOYAMA ET AL.

Examiner

Joseph Leyson

Art Unit

1722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004 to 21 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

On p. 21, line 2, "0.4D" should be changed to --D--, as understood from the rest of the specification.

Appropriate correction is required.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the angle of θ between end faces of the weir plate and the check ring and a vertical axis being set to 70° through 90° , as recited by claim 2, must be shown or the feature(s) canceled from the claim(s). Figures 1, 3 and 4 all show the angle of θ between end faces of the weir plate and the check ring and a vertical axis being set to 0° , NOT 70° through 90° . However, note that the rejection of claim 2 under 35 U.S.C. 112, first paragraph, should be addressed BEFORE correcting the drawings to include the angle of θ being 90° . NO NEW MATTER should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet,

Art Unit: 1722

and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 5 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form.

Dependent claim 5 is an apparatus claim which does not further recite structure or structural relationships and which only further recites materials to be worked upon by the claimed apparatus. "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "[i]nclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." In re Young, 75 F.2d 996, 25 USPQ 69 (CCPA 1935) (as restated in In re Otto, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)). See MPEP 2115.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 2 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification (for example, fig. 1; p. 15, lines 14-23; p. 16, line 14, to p. 17, line 7) and claim 2 recite an angle of θ between end faces of the weir plate and the check ring and a vertical axis is set to 70° through 90° . The specification further discloses a check ring 26 which slidably reciprocates between the screw head 20 and the weir plate 22, wherein a path width B is closed when the check ring 26 is brought into contact with the weir plate 22.

However, if the angle of θ is 90° , then the end faces of the weir plate and the check ring would be at a right angle to the vertical axis, making the end faces of the weir plate and the check ring PARALLEL to the reciprocation direction of the check ring. Therefore, reciprocation of the check ring would not close the path width B because the check ring would never be brought into contact with the weir plate.

NO NEW MATTER should be added to the specification or claims.

Claim Rejections - 35 USC § 103

Art Unit: 1722

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1, 2, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese reference (6-246802) in view of Uehara et al. (U.S. Patent 6,228,308).

Japanese reference (6-246802) discloses an inline screw plasticizing injection apparatus which plasticizes and injects a thermoplastic resin pellet including long glass fibers having a length substantially the same as a length of the pellet and aligned in a longitudinal direction of the pellet (for example, see paragraph number 006), the injection apparatus comprising a screw 14 having a diameter (D) of 100 mm (for example, see table 1), a hollow heating cylinder 12 in which the screw 14 is provided, a screw head 20 coupled to the screw 14 through a shaft 24, a weir plate 22 fixed at a rear end of the shaft 24, and a check ring 26 slidably fitted around the shaft 24 so as to

Art Unit: 1722

be capable of reciprocating between the screw head 20 and the weir plate 22 in a space defined by the shaft 24 and the heating cylinder 12 so that a molten resin path is formed by the heating cylinder 12, the screw head 20, the shaft 24, the check ring 26 and the weir plate 22. Japanese reference (6-246802: for example, see paragraph 0015) also discloses that conventional plasticization injection equipment have a width in a direction orthogonal to a flow direction of the molten resin in the molten resin path formed by the weir plate 22 and the check ring 26 that is set to 3 through 6% of the diameter (D) of the screw 14. An angle of θ between end faces of the weir plate 22 and the check ring 26 and a vertical axis is desired to be 30 through 40° (see paragraph 0017).

However, Japanese reference (6-246802) does not disclose a ratio of a length (L) / a diameter (D) in the screw being set to 18 through 24, a length (Lf) of a supplying portion of the screw being set to 10 through 14 times the diameter (D), a groove depth (hf) of the supplying portion of the screw being set to be not less than 13 mm, or a groove depth (hm) of a measuring portion of the screw being set to be not less than 8 mm.

Uehara et al. (U.S. Patent 6,228,308) disclose an inline screw plasticizing injection apparatus which plasticizes and injects a thermoplastic resin pellet including long glass fibers having a length substantially the same as a length of the pellet and aligned in a longitudinal direction of the pellet (for example, see col. 1, lines 7-21; col. 9, lines 2-4; 18-25), the injection apparatus comprising a screw 1, a hollow heating cylinder 4, 5 in which the screw 1 is provided, a screw head 3 coupled to the screw 1 through a shaft (see fig. 4), and a check ring 2 slidably fitted around the shaft so as to

Art Unit: 1722

be capable of reciprocating along the shaft so that a molten resin path is formed by the heating cylinder 4, 5, the screw head 3, the shaft, the check ring 2 and the screw 1.

Uehara et al. (U.S. Patent 6,228,308) disclose further characteristics as follows. A ratio of a length (L) / a diameter (D) in the screw 1 is set to 15 through 25 (i.e., col. 2, lines 13-22; col. 10, lines 44-48). A feed or supplying portion length (Sf), a compression portion length (Sc) and a metering portion length (Sm) are generally of the ratio of the length of the screw in the range of from 2:1:1 to 3:2:1 (i.e., figs. 1-3; col. 2, lines 13-22).

Note that if L/D is 24, then $L=24D$; and if $L=24D$ and if $Sf:Sc:Sm$ is 3:2:1, then

$Sf:Sc:Sm=12D:8D:4D$, such that the length (Sf) of the supplying portion of the screw 1 is set to 12 times the diameter (D). A groove depth (Hf) of the supplying portion (Sf) is in the range of $0.13D$ to $0.18D$, and the groove depth (Hm) of the metering portion (Sm) is in the range of $0.03D$ to $0.08D$ (i.e., col. 2, lines 28-40). Note that if $D=100\text{mm}$ (as taught by Japanese reference (6-246802) as mentioned above) and if $Hf=0.18D$ and if $Hm=0.08D$, then the groove depth (Hf) of the supplying portion of the screw is 18 mm, and the groove depth (Hm) of a measuring portion of the screw is 8 mm.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the apparatus of Japanese reference (6-246802) with the further characteristics as mentioned above of the apparatus of Uehara et al. (U.S. Patent 6,228,308) with a reasonable expectation of success because Uehara et al. (U.S. Patent 6,228,308: i.e., cols. 1-2) disclose that such characteristics are conventional in the art and would provide working dimensions and/or dimensional relationships for an inline screw plasticizing injection apparatus. As to the limitations of

instant claims 2 and 4, such limitations relate to the desired dimensions of the claimed apparatus. It would have been further obvious to an artisan of ordinary skill to modify the angle of θ between end faces of the weir plate and the check ring and a vertical axis to be set to 70° through 90° or to modify a width of the check ring to be set to 0.3 through 0.4 times the diameter (D) of the screw because such a modification would still enable the check ring to function as a valve as before. In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. As to the limitations of instant claim 5, wherein a matrix polymer of the long glass fiber reinforced thermosetting resin is constituted by a polypropylene resin having a high fluidity in which a melt flow rate thereof falls in a range of 100 through 300 g/10 min, such limitations relate to the intended use of the claimed apparatus. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987); see MPEP 2114. "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "[i]nclusion of material or article worked upon by a

Art Unit: 1722

structure being claimed does not impart patentability to the claims." In re Young, 75 F.2d 996, 25 USPQ 69 (CCPA 1935) (as restated in In re Otto, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)). See MPEP 2115.

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese reference (6-246802) in view of Uehara et al. (U.S. Patent 6,228,308) as applied to claims 1, 2, 4 and 5 above, and further in view of Taniguchi (U.S. Patent 5,002,717).

Taniguchi (U.S. Patent 5,002,717) discloses an inline screw plasticizing injection apparatus including a check ring 5 having a front side provided with projections 5b which are fitted to notches 4d of a screw head 4 of a screw 2 so that the screw head 4 and the check ring 5 rotate together when the screw 2 is rotated (i.e., col. 5, lines 28-44; figs. 3(a)-4(c)).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to further modify the apparatus such that a projection is provided on a front side of the check ring which is fitted to a notch provided on the screw head because such a modification is conventional in the art and would enable the screw head and the check ring to rotate together when the screw is rotated, as disclosed by Taniguchi (U.S. Patent 5,002,717).

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gill et al. (U.S. Patent 5,167,971) teach an angle of θ between end faces of a weir plate and a check ring and a vertical axis being set to 0° through 30° (col. 4, lines 46-52). Japanese reference (2-292008) and Japanese reference (2002-

Art Unit: 1722

220538) are mentioned in the instant specification. Maier (U.S. Patent 3,263,276) discloses a screw with different processing zones (see figs. 1-2). Suumen et al. (U.S. Patent 6,007,322) disclose a checking with projections 76. Heathe et al. (U.S. Patent 4,988,281) and Stubbe (U.S. Patent 4,105,147) disclose valve assemblies (see respective figures).


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Leyson whose telephone number is (571) 272-5061. The examiner can normally be reached on M-F 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gupta Yogendra can be reached on (571) 272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JL


ROBERT DAVIS
PRIMARY EXAMINER
GROUP 1300 / 700

3/28/06